

## Patent Application US/07/938,990

## SEQUENCE LISTING

## (1) GENERAL INFORMATION:

(i) APPLICANT: Griffith, Irwin J.  
Pollock, Joanne  
Bond Julian

(ii) TITLE OF INVENTION: Allergenic Proteins And Peptides From  
Japanese Cedar Pollen

(iii) NUMBER OF SEQUENCES: 70

## (iv) CORRESPONDENCE ADDRESS:

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(C) CITY: Boston  
(D) STATE: MA  
(E) COUNTRY: USA  
(F) ZIP: 02109

## (v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: Floppy disk  
(B) COMPUTER: IBM PC compatible  
(C) OPERATING SYSTEM: PC-DOS/MS-DOS  
(D) SOFTWARE: PatentIn Release #1.0, Version #1.25

## (vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER: 07/938,990  
(B) FILING DATE: September 1, 1992  
(C) CLASSIFICATION:

## (vii) PRIOR APPLICATION DATA:

(A) APPLICATION NUMBER: 07/730,452  
(B) FILING DATE: July 15, 1991

## (viii) PRIOR APPLICATION DATA:

(A) APPLICATION NUMBER: 07/729,134  
(B) FILING DATE: July 10, 1991

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(B) REGISTRATION NUMBER: 36,207  
(C) REFERENCE/DOCKET NUMBER: IPC-025CC (IMI-028)

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67 (2) INFORMATION FOR SEQ ID NO:1:  
68  
69 (i) SEQUENCE CHARACTERISTICS:  
70 (A) LENGTH: 1337 base pairs  
71 (B) TYPE: nucleic acid  
72 (C) STRANDEDNESS: single  
73 (D) TOPOLOGY: linear  
74  
75 (ii) MOLECULE TYPE: cDNA to mRNA  
76  
77 (vi) ORIGINAL SOURCE:  
78 (A) ORGANISM: *Cryptomeria japonica*  
79  
80 (ix) FEATURE:  
81 (A) NAME/KEY: CDS  
82 (B) LOCATION: 66..1187  
83  
84 (ix) FEATURE:  
85 (A) NAME/KEY: mat\_peptide  
86 (B) LOCATION: 129..1187  
87  
88  
89 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:  
90  
91 AGTCAATCTG CTCATAATCA TAGCATAGCC GTATAGAAAG AAATTCTACA CTCTGCTACC 60  
92  
93 AAAAA ATG GAT TCC CCT TGC TTA GTA GCA TTA CTG GTT TTC TCT TTT 107  
94 Met Asp Ser Pro Cys Leu Val Ala Leu Leu Val Phe Ser Phe  
95 -21 -20 -15 -10  
96  
97 GTA ATT GGA TCT TGC TTT TCT GAT AAT CCC ATA GAC AGC TGC TGG AGA 155  
98 Val Ile Gly Ser Cys Phe Ser Asp Asn Pro Ile Asp Ser Cys Trp Arg  
99 -5 1 5  
100  
101 GGA GAC TCA AAC TGG GCC CAA AAT AGA ATG AAG CTC GCA GAT TGT GCA 203  
102 Gly Asp Ser Asn Trp Ala Gln Asn Arg Met Lys Leu Ala Asp Cys Ala  
103 10 15 20 25  
104

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|-----|---|-----|
| 105 | GTG GGC TTC GGA AGC TCC ACC ATG GGA GGC AAG GGA GGA GAT CTT TAT | 251 |
| 106 | Val Gly Phe Gly Ser Ser Thr Met Gly Gly Lys Gly Gly Asp Leu Tyr |     |
| 107 | 30 35 40  |     |
| 108 |   |     |
| 109 | ACG GTC ACG AAC TCA GAT GAC GAC CCT GTG AAT CCT GCA CCA GGA ACT | 299 |
| 110 | Thr Val Thr Asn Ser Asp Asp Asp Pro Val Asn Pro Ala Pro Gly Thr |     |
| 111 | 45 50 55  |     |
| 112 |   |     |
| 113 | CTG CGC TAT GGA GCA ACC CGA GAT AGG CCC CTG TGG ATA ATT TTC AGT | 347 |
| 114 | Leu Arg Tyr Gly Ala Thr Arg Asp Arg Pro Leu Trp Ile Ile Phe Ser |     |
| 115 | 60 65 70  |     |
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| 132 |   |     |
| 133 | GGG AAT ATG AAT ATA AAG CTC AAA ATG CCT ATG TAC ATT GCT GGG TAT | 395 |
| 134 | Gly Asn Met Asn Ile Lys Leu Lys Met Pro Met Tyr Ile Ala Gly Tyr |     |
| 135 | 75 80 85  |     |
| 136 |   |     |
| 137 | AAG ACT TTT GAT GGC AGG GGA GCA CAA GTT TAT ATT GGC AAT GGC GGT | 443 |
| 138 | Lys Thr Phe Asp Gly Arg Gly Ala Gln Val Tyr Ile Gly Asn Gly Gly |     |
| 139 | 90 95 100 105   |     |
| 140 |   |     |
| 141 | CCC TGT GTG TTT ATC AAG AGA GTT AGC AAT GTT ATC ATA CAC GGT TTG | 491 |
| 142 | Pro Cys Val Phe Ile Lys Arg Val Ser Asn Val Ile Ile His Gly Leu |     |
| 143 | 110 115 120   |     |
| 144 |   |     |
| 145 | TAT CTG TAC GGC TGT AGT ACT AGT GTT TTG GGG AAT GTT TTG ATA AAC | 539 |
| 146 | Tyr Leu Tyr Gly Cys Ser Thr Ser Val Leu Gly Asn Val Leu Ile Asn |     |
| 147 | 125 130 135   |     |
| 148 |   |     |
| 149 | GAG AGT TTT GGC GTG GAG CCT GTT CAT CCT CAG GAT GGC GAT GCT CTT | 587 |
| 150 | Glu Ser Phe Gly Val Glu Pro Val His Pro Gln Asp Gly Asp Ala Leu |     |
| 151 | 140 145 150   |     |
| 152 |   |     |
| 153 | ACT CTG CGC ACT GCT ACA AAT ATT TGG ATT GAT CAT AAT TCT TTC TCC | 635 |
| 154 | Thr Leu Arg Thr Ala Thr Asn Ile Trp Ile Asp His Asn Ser Phe Ser |     |
| 155 | 155 160 165   |     |
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|-----|---|------|
| 157 | AAT TCT TCT GAT GGT CTG GTC GAT GTC ACT CTT ACT TCG ACT GGA GTT | 683  |
| 158 | Asn Ser Ser Asp Gly Leu Val Asp Val Thr Leu Thr Ser Thr Gly Val |      |
| 159 | 170 175 180 185   |      |
| 160 |   |      |
| 161 | ACT ATT TCA AAC AAT CTT TTT TTC AAC CAT CAT AAA GTG ATG TTG TTA | 731  |
| 162 | Thr Ile Ser Asn Asn Leu Phe Phe Asn His His Lys Val Met Leu Leu |      |
| 163 | 190 195 200   |      |
| 164 |   |      |
| 165 | GGG CAT GAT GAT GCA TAT AGT GAT GAC AAA TCC ATG AAG GTG ACA GTG | 779  |
| 166 | Gly His Asp Asp Ala Tyr Ser Asp Asp Lys Ser Met Lys Val Thr Val |      |
| 167 | 205 210 215   |      |
| 168 |   |      |
| 169 | GCG TTC AAT CAA TTT GGA CCT AAC TGT GGA CAA AGA ATG CCC AGG GCA | 827  |
| 170 | Ala Phe Asn Gln Phe Gly Pro Asn Cys Gly Gln Arg Met Pro Arg Ala |      |
| 171 | 220 225 230   |      |
| 172 |   |      |
| 173 | CGA TAT GGA CTT GTA CAT GTT GCA AAC AAT AAT TAT GAC CCA TGG ACT | 875  |
| 174 | Arg Tyr Gly Leu Val His Val Ala Asn Asn Asn Tyr Asp Pro Trp Thr |      |
| 175 | 235 240 245   |      |
| 176 |   |      |
| 177 | ATA TAT GCA ATT GGT GGG AGT TCA AAT CCA ACC ATT CTA AGT GAA GGG | 923  |
| 178 | Ile Tyr Ala Ile Gly Gly Ser Ser Asn Pro Thr Ile Leu Ser Glu Gly |      |
| 179 | 250 255 260 265   |      |
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| 198 |   |      |
| 199 | AAT AGT TTC ACT GCA CCA AAT GAG AGC TAC AAG AAG CAA GTA ACC ATA | 971  |
| 200 | Asn Ser Phe Thr Ala Pro Asn Glu Ser Tyr Lys Lys Gln Val Thr Ile |      |
| 201 | 270 275 280   |      |
| 202 |   |      |
| 203 | CGT ATT GGA TGC AAA ACA TCA TCA TCT TGT TCA AAT TGG GTG TGG CAA | 1019 |
| 204 | Arg Ile Gly Cys Lys Thr Ser Ser Ser Cys Ser Asn Trp Val Trp Gln |      |
| 205 | 285 290 295   |      |
| 206 |   |      |
| 207 | TCT ACA CAA GAT GTT TTT TAT AAT GGA GCT TAT TTT GTA TCA TCA GGG | 1067 |
| 208 | Ser Thr Gln Asp Val Phe Tyr Asn Gly Ala Tyr Phe Val Ser Ser Gly |      |

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209                    300                    305                    310  
210  
211   AAA TAT GAA GGG GGT AAT ATA TAC ACA AAG AAA GAA GCT TTC AAT GTT                    1115  
212   Lys Tyr Glu Gly Gly Asn Ile Tyr Thr Lys Lys Glu Ala Phe Asn Val  
213                    315                    320                    325  
214  
215   GAG AAT GGG AAT GCA ACT CCT CAA TTG ACA AAA AAT GCT GGG GTT TTA                    1163  
216   Glu Asn Gly Asn Ala Thr Pro Gln Leu Thr Lys Asn Ala Gly Val Leu  
217   330                    335                    340                    345  
218  
219   ACA TGC TCT CTC TCT AAA CGT TGT TGATGATGCA TATATTCTAG CATGTTGTAC                    1217  
220   Thr Cys Ser Leu Ser Lys Arg Cys  
221                    350  
222  
223   TATCTAAATT AACATCAACA AGAAAATATA TCATGATGTA TATTGTTGTA TTGATGTCAA                    1277  
224  
225   AATAAAAATG TATCTTTTAC TATTAAAAAA AAAAATGATC GATCGGACGG TACCTCTAGA                    1337  
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229   (2) INFORMATION FOR SEQ ID NO:2:  
230  
231                    (i) SEQUENCE CHARACTERISTICS:  
232                    (A) LENGTH: 374 amino acids  
233                    (B) TYPE: amino acid  
234                    (D) TOPOLOGY: linear  
235  
236                    (ii) MOLECULE TYPE: protein  
237  
238                    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:  
239  
240   Met Asp Ser Pro Cys Leu Val Ala Leu Leu Val Phe Ser Phe Val Ile  
241   -21 -20                    -15                    -10  
242  
243   Gly Ser Cys Phe Ser Asp Asn Pro Ile Asp Ser Cys Trp Arg Gly Asp  
244   -5                    1                    5                    10  
245  
246   Ser Asn Trp Ala Gln Asn Arg Met Lys Leu Ala Asp Cys Ala Val Gly  
247                    15                    20                    25  
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265 Phe Gly Ser Ser Thr Met Gly Gly Lys Gly Gly Asp Leu Tyr Thr Val  
266 30 35 40  
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268 Thr Asn Ser Asp Asp Asp Pro Val Asn Pro Ala Pro Gly Thr Leu Arg  
269 45 50 55  
270  
271 Tyr Gly Ala Thr Arg Asp Arg Pro Leu Trp Ile Ile Phe Ser Gly Asn  
272 60 65 70 75  
273  
274 Met Asn Ile Lys Leu Lys Met Pro Met Tyr Ile Ala Gly Tyr Lys Thr  
275 80 85 90  
276  
277 Phe Asp Gly Arg Gly Ala Gln Val Tyr Ile Gly Asn Gly Gly Pro Cys  
278 95 100 105  
279  
280 Val Phe Ile Lys Arg Val Ser Asn Val Ile Ile His Gly Leu Tyr Leu  
281 110 115 120  
282  
283 Tyr Gly Cys Ser Thr Ser Val Leu Gly Asn Val Leu Ile Asn Glu Ser  
284 125 130 135  
285  
286 Phe Gly Val Glu Pro Val His Pro Gln Asp Gly Asp Ala Leu Thr Leu  
287 140 145 150 155  
288  
289 Arg Thr Ala Thr Asn Ile Trp Ile Asp His Asn Ser Phe Ser Asn Ser  
290 160 165 170  
291  
292 Ser Asp Gly Leu Val Asp Val Thr Leu Thr Ser Thr Gly Val Thr Ile  
293 175 180 185  
294  
295 Ser Asn Asn Leu Phe Phe Asn His His Lys Val Met Leu Leu Gly His  
296 190 195 200  
297  
298 Asp Asp Ala Tyr Ser Asp Asp Lys Ser Met Lys Val Thr Val Ala Phe  
299 205 210 215  
300  
301 Asn Gln Phe Gly Pro Asn Cys Gly Gln Arg Met Pro Arg Ala Arg Tyr  
302 220 225 230 235  
303  
304 Gly Leu Val His Val Ala Asn Asn Asn Tyr Asp Pro Trp Thr Ile Tyr  
305 240 245 250  
306  
307 Ala Ile Gly Gly Ser Ser Asn Pro Thr Ile Leu Ser Glu Gly Asn Ser  
308 255 260 265  
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310 Phe Thr Ala Pro Asn Glu Ser Tyr Lys Lys Gln Val Thr Ile Arg Ile  
311 270 275 280  
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313 Gly Cys Lys Thr Ser Ser Ser Cys Ser Asn Trp Val Trp Gln Ser Thr  
314 285 290 295

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331 Gln Asp Val Phe Tyr Asn Gly Ala Tyr Phe Val Ser Ser Gly Lys Tyr  
332 300 305 310 315

333  
334 Glu Gly Gly Asn Ile Tyr Thr Lys Lys Glu Ala Phe Asn Val Glu Asn  
335 320 325 330

336  
337 Gly Asn Ala Thr Pro Gln Leu Thr Lys Asn Ala Gly Val Leu Thr Cys  
338 335 340 345

339  
340 Ser Leu Ser Lys Arg Cys  
341 350

342

343 (2) INFORMATION FOR SEQ ID NO:3:

344

345 (i) SEQUENCE CHARACTERISTICS:

346 (A) LENGTH: 17 base pairs

347 (B) TYPE: nucleic acid

348 (C) STRANDEDNESS: single

349 (D) TOPOLOGY: linear

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353 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

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355 GAYAAAYCCNA THGAYWS

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357 (2) INFORMATION FOR SEQ ID NO:4:

358

359 (i) SEQUENCE CHARACTERISTICS:

360 (A) LENGTH: 25 base pairs

361 (B) TYPE: nucleic acid

362 (C) STRANDEDNESS: single

363 (D) TOPOLOGY: linear

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366  
367 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:  
368  
369 GCGAATTCAA YTGCGCNCAR AAYSG 25  
370  
371 (2) INFORMATION FOR SEQ ID NO:5:  
372  
373 (i) SEQUENCE CHARACTERISTICS:  
374 (A) LENGTH: 23 base pairs  
375 (B) TYPE: nucleic acid  
376 (C) STRANDEDNESS: single  
377 (D) TOPOLOGY: linear  
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397 (ix) FEATURE:  
398 (A) NAME/KEY: modified\_base  
399 (B) LOCATION: 15  
400 (D) OTHER INFORMATION: /mod\_base= i  
401  
402  
403 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:  
404  
405 CTGCAGCCRT TYTCNACRTT RAA 23  
406  
407 (2) INFORMATION FOR SEQ ID NO:6:  
408  
409 (i) SEQUENCE CHARACTERISTICS:  
410 (A) LENGTH: 20 base pairs  
411 (B) TYPE: nucleic acid  
412 (C) STRANDEDNESS: single  
413 (D) TOPOLOGY: linear  
414  
415  
416 (ix) FEATURE:



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417 (A) NAME/KEY: modified\_base  
418 (B) LOCATION: 6  
419 (D) OTHER INFORMATION: /mod\_base= i  
420  
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422 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:  
423

424 TTCATNCKRT TYTGNGCCCA

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426 (2) INFORMATION FOR SEQ ID NO:7:  
427

428 (i) SEQUENCE CHARACTERISTICS:  
429 (A) LENGTH: 25 base pairs  
430 (B) TYPE: nucleic acid  
431 (C) STRANDEDNESS: single  
432 (D) TOPOLOGY: linear  
433  
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436 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:  
437

438 CCTGCAGCKR TTYTGNGCCC AARTT

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439  
440 (2) INFORMATION FOR SEQ ID NO:8:  
441

442 (i) SEQUENCE CHARACTERISTICS:  
443 (A) LENGTH: 18 base pairs  
444 (B) TYPE: nucleic acid  
445 (C) STRANDEDNESS: single  
446 (D) TOPOLOGY: linear  
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463 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:  
464

465 ATGGATTCCC CTTGCTTA

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467 (2) INFORMATION FOR SEQ ID NO:9:  
468

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469 (i) SEQUENCE CHARACTERISTICS:  
470 (A) LENGTH: 26 base pairs  
471 (B) TYPE: nucleic acid  
472 (C) STRANDEDNESS: single  
473 (D) TOPOLOGY: linear  
474  
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476

477 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:  
478

479 GCGAATTCGA TAATCCCATG GACAGC

480 *← insert beginning parenthesis* 26  
481 (2) INFORMATION FOR SEQ ID NO:10:  
482

483 (i) SEQUENCE CHARACTERISTICS:  
484 (A) LENGTH: 17 base pairs  
485 (B) TYPE: nucleic acid  
486 (C) STRANDEDNESS: single  
487 (D) TOPOLOGY: linear  
488  
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491 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:  
492

493 ATGCCTATGT ACATTGC 17  
494

495 (2) INFORMATION FOR SEQ ID NO:11:  
496

497 (i) SEQUENCE CHARACTERISTICS:  
498 (A) LENGTH: 17 base pairs  
499 (B) TYPE: nucleic acid  
500 (C) STRANDEDNESS: single  
501 (D) TOPOLOGY: linear  
502  
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505 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:  
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507 GCAATGTACA TAGGCAT 17  
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529 (2) INFORMATION FOR SEQ ID NO:12:  
530  
531 (i) SEQUENCE CHARACTERISTICS:  
532 (A) LENGTH: 18 base pairs  
533 (B) TYPE: nucleic acid  
534 (C) STRANDEDNESS: single  
535 (D) TOPOLOGY: linear  
536  
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538  
539 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:  
540  
541 TCCAATTCTT CTGATGGT 18  
542  
543 (2) INFORMATION FOR SEQ ID NO:13:  
544  
545 (i) SEQUENCE CHARACTERISTICS:  
546 (A) LENGTH: 18 base pairs  
547 (B) TYPE: nucleic acid  
548 (C) STRANDEDNESS: single  
549 (D) TOPOLOGY: linear  
550  
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553 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:  
554  
555 TTTTGTCAAT TGAGGAGT 18  
556  
557  
558 (2) INFORMATION FOR SEQ ID NO:14:  
559  
560 (i) SEQUENCE CHARACTERISTICS:  
561 (A) LENGTH: 30 base pairs  
562 (B) TYPE: nucleic acid  
563 (C) STRANDEDNESS: single  
564 (D) TOPOLOGY: linear  
565  
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567  
568 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:  
569  
570 CCTGCAGAAG CTTTCATCAAC AACGTTTAGA 30  
571  
572 (2) INFORMATION FOR SEQ ID NO:15:

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573

## (i) SEQUENCE CHARACTERISTICS:

575 (A) LENGTH: 19 base pairs

576 (B) TYPE: nucleic acid

577 (C) STRANDEDNESS: single

578 (D) TOPOLOGY: linear

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## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

596

597 TAGCAACTCC AGTCGAAGT

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## (2) INFORMATION FOR SEQ ID NO:16:

600

## (i) SEQUENCE CHARACTERISTICS:

602 (A) LENGTH: 17 base pairs

603 (B) TYPE: nucleic acid

604 (C) STRANDEDNESS: single

605 (D) TOPOLOGY: linear

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## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

610

611 TAGCTCTCAT TTGGTGC

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612

## (2) INFORMATION FOR SEQ ID NO:17:

614

## (i) SEQUENCE CHARACTERISTICS:

616 (A) LENGTH: 18 base pairs

617 (B) TYPE: nucleic acid

618 (C) STRANDEDNESS: single

619 (D) TOPOLOGY: linear

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## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

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625 TATGCAATTG GTGGGAGT 18  
626  
627 (2) INFORMATION FOR SEQ ID NO:18:  
628  
629 (i) SEQUENCE CHARACTERISTICS:  
630 (A) LENGTH: 20 amino acids  
631 (B) TYPE: amino acid  
632 (D) TOPOLOGY: linear  
633  
634 (ii) MOLECULE TYPE: peptide  
635  
636 (v) FRAGMENT TYPE: N-terminal  
637  
638 (vi) ORIGINAL SOURCE:  
639 (A) ORGANISM: *Cryptomeria japonica*  
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661 (ix) FEATURE:  
662 (A) NAME/KEY: Modified-site  
663 (B) LOCATION: 7  
664 (D) OTHER INFORMATION: /note= "the amino acid at position  
665 7 is Ser, Cys, Thr, or His"  
666  
667  
668 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:  
669  
670 Asp Asn Pro Ile Asp Ser Xaa Trp Arg Gly Asp Ser Asn Trp Ala Gln  
671 1 5 10 15  
672  
673 Asn Arg Met Lys  
674 20  
675  
676 (2) INFORMATION FOR SEQ ID NO:19:

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677  
678 (i) SEQUENCE CHARACTERISTICS:  
679 (A) LENGTH: 16 amino acids  
680 (B) TYPE: amino acid  
681 (D) TOPOLOGY: linear  
682  
683 (ii) MOLECULE TYPE: peptide  
684  
685 (v) FRAGMENT TYPE: internal  
686  
687 (vi) ORIGINAL SOURCE:  
688 (A) ORGANISM: *Cryptomeria japonica*  
689  
690  
691 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:  
692  
693 Glu Ala Phe Asn Val Glu Asn Gly Asn Ala Thr Pro Gln Leu Thr Lys  
694 1 5 10 15  
695  
696  
697 (2) INFORMATION FOR SEQ ID NO:20:  
698  
699 (i) SEQUENCE CHARACTERISTICS:  
700 (A) LENGTH: 30 base pairs  
701 (B) TYPE: nucleic acid  
702 (C) STRANDEDNESS: single  
703 (D) TOPOLOGY: linear  
704  
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707 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:  
708  
709 GGGTCTAGAG GTACCGTCCG ATCGATCATT  
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727 (2) INFORMATION FOR SEQ ID NO:21:  
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729 (i) SEQUENCE CHARACTERISTICS:  
730 (A) LENGTH: 20 base pairs  
731 (B) TYPE: nucleic acid  
732 (C) STRANDEDNESS: single  
733 (D) TOPOLOGY: linear  
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737 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:  
738  
739 GGGTCTAGAG GTACCGTCCG 20  
740  
741 (2) INFORMATION FOR SEQ ID NO:22:  
742  
743 (i) SEQUENCE CHARACTERISTICS:  
744 (A) LENGTH: 13 base pairs  
745 (B) TYPE: nucleic acid  
746 (C) STRANDEDNESS: single  
747 (D) TOPOLOGY: linear  
748  
749  
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751 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:  
752  
753 AATGATCGAT GCT 13  
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755 (2) INFORMATION FOR SEQ ID NO:23:  
756  
757 (i) SEQUENCE CHARACTERISTICS:  
758 (A) LENGTH: 21 base pairs  
759 (B) TYPE: nucleic acid  
760 (C) STRANDEDNESS: single  
761 (D) TOPOLOGY: linear  
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765 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:  
766  
767 GGAATTCTCT AGACTGCAGG T 21  
768  
769 (2) INFORMATION FOR SEQ ID NO:24:  
770  
771 (i) SEQUENCE CHARACTERISTICS:  
772 (A) LENGTH: 35 base pairs  
773 (B) TYPE: nucleic acid  
774 (C) STRANDEDNESS: single  
775 (D) TOPOLOGY: linear  
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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

GGAATTCTCT AGACTGCAGG TTTTTTTTTT TTTT

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(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: N-terminal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Juniperus sabinoides

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Asp Asn Pro Ile Asp

1 5

(2) INFORMATION FOR SEQ ID NO:26:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:



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833  
834 Asp Asn Pro Ile Asp Ser Cys Trp Arg Gly Asp Ser Asn Trp Ala Gln  
835 1 5 10 15

836  
837 Asn Arg Met Lys  
838 20  
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## 859 (2) INFORMATION FOR SEQ ID NO:27:

860  
861 (i) SEQUENCE CHARACTERISTICS:  
862 (A) LENGTH: 20 amino acids  
863 (B) TYPE: amino acid  
864 (D) TOPOLOGY: linear  
865

866 (ii) MOLECULE TYPE: peptide  
867

868 (v) FRAGMENT TYPE: internal  
869  
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871

## 872 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

873  
874 Asp Ser Asn Trp Ala Gln Asn Arg Met Lys Leu Ala Asp Cys Ala Val  
875 1 5 10 15  
876

877 Gly Phe Gly Ser  
878 20  
879

## 880 (2) INFORMATION FOR SEQ ID NO:28:

881  
882 (i) SEQUENCE CHARACTERISTICS:  
883 (A) LENGTH: 20 amino acids  
884 (B) TYPE: amino acid

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885 (D) TOPOLOGY: linear  
886  
887 (ii) MOLECULE TYPE: peptide  
888  
889 (v) FRAGMENT TYPE: internal  
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893 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:  
894  
895 Leu Ala Asp Cys Ala Val Gly Phe Gly Ser Ser Thr Met Gly Gly Lys  
896 1 5 10 15  
897  
898 Gly Gly Asp Leu  
899 20  
900  
901 (2) INFORMATION FOR SEQ ID NO:29:  
902  
903 (i) SEQUENCE CHARACTERISTICS:  
904 (A) LENGTH: 20 amino acids  
905 (B) TYPE: amino acid  
906 (D) TOPOLOGY: linear  
907  
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925 (ii) MOLECULE TYPE: peptide  
926  
927 (v) FRAGMENT TYPE: internal  
928  
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931 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:  
932  
933 Ser Thr Met Gly Gly Lys Gly Gly Asp Leu Tyr Thr Val Thr Asn Ser  
934 1 5 10 15  
935  
936 Asp Asp Asp Pro

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937 20

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939 (2) INFORMATION FOR SEQ ID NO:30:

940

941 (i) SEQUENCE CHARACTERISTICS:

942 (A) LENGTH: 20 amino acids

943 (B) TYPE: amino acid

944 (D) TOPOLOGY: linear

945

946 (ii) MOLECULE TYPE: peptide

947

948 (v) FRAGMENT TYPE: internal

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952 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

953

954 Tyr Thr Val Thr Asn Ser Asp Asp Asp Pro Val Asn Pro Ala Pro Gly

955 1 5 10 15

956

957 Thr Leu Arg Tyr

958 20

959

960 (2) INFORMATION FOR SEQ ID NO:31:

961

962 (i) SEQUENCE CHARACTERISTICS:

963 (A) LENGTH: 20 amino acids

964 (B) TYPE: amino acid

965 (D) TOPOLOGY: linear

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967 (ii) MOLECULE TYPE: peptide

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969 (v) FRAGMENT TYPE: internal

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991 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:  
992  
993 Val Asn Pro Ala Pro Gly Thr Leu Arg Tyr Gly Ala Thr Arg Asp Arg  
994 1 5 10 15  
995  
996 Pro Leu Trp Ile  
997 20  
998  
999 (2) INFORMATION FOR SEQ ID NO:32:  
1000  
1001 (i) SEQUENCE CHARACTERISTICS:  
1002 (A) LENGTH: 20 amino acids  
1003 (B) TYPE: amino acid  
1004 (D) TOPOLOGY: linear  
1005  
1006 (ii) MOLECULE TYPE: peptide  
1007  
1008 (v) FRAGMENT TYPE: internal  
1009  
1010  
1011 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:  
1012  
1013 Gly Ala Thr Arg Asp Arg Pro Leu Trp Ile Ile Phe Ser Gly Asn Met  
1014 1 5 10 15  
1015  
1016 Asn Ile Lys Leu  
1017 20  
1018  
1019 (2) INFORMATION FOR SEQ ID NO:33:  
1020  
1021 (i) SEQUENCE CHARACTERISTICS:  
1022 (A) LENGTH: 20 amino acids  
1023 (B) TYPE: amino acid  
1024 (D) TOPOLOGY: linear  
1025  
1026 (ii) MOLECULE TYPE: peptide  
1027  
1028 (v) FRAGMENT TYPE: internal  
1029  
1030  
1031  
1032 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:  
1033  
1034 Ile Phe Ser Gly Asn Met Asn Ile Lys Leu Lys Met Pro Met Tyr Ile  
1035 1 5 10 15  
1036  
1037 Ala Gly Tyr Lys  
1038 20  
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## (2) INFORMATION FOR SEQ ID NO:34:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 20 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Lys Met Pro Met Tyr Ile Ala Gly Tyr Lys Thr Phe Asp Gly Arg Gly  
1 5 10 15  
Ala Gln Val Tyr  
20

## (2) INFORMATION FOR SEQ ID NO:35:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 20 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

1092

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1093 Thr Phe Asp Gly Arg Gly Ala Gln Val Tyr Ile Gly Asn Gly Gly Pro  
1094 1 5 10 15

1095  
1096 Cys Val Phe Ile  
1097 20

1098  
1099 (2) INFORMATION FOR SEQ ID NO:36:

1100  
1101 (i) SEQUENCE CHARACTERISTICS:  
1102 (A) LENGTH: 20 amino acids  
1103 (B) TYPE: amino acid  
1104 (D) TOPOLOGY: linear  
1105  
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1123 (ii) MOLECULE TYPE: peptide

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1125 (v) FRAGMENT TYPE: internal  
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1128  
1129 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:  
1130

1131 Ile Gly Asn Gly Gly Pro Cys Val Phe Ile Lys Arg Val Ser Asn Val  
1132 1 5 10 15

1133  
1134 Ile Ile His Gly  
1135 20

1136  
1137 (2) INFORMATION FOR SEQ ID NO:37:  
1138

1139 (i) SEQUENCE CHARACTERISTICS:  
1140 (A) LENGTH: 20 amino acids  
1141 (B) TYPE: amino acid  
1142 (D) TOPOLOGY: linear  
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1144 (ii) MOLECULE TYPE: peptide

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1146 (v) FRAGMENT TYPE: internal  
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1150 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:  
1151  
1152 Lys Arg Val Ser Asn Val Ile Ile His Gly Leu Tyr Leu Tyr Gly Cys  
1153 1 5 10 15  
1154  
1155 Ser Thr Ser Val  
1156 20  
1157  
1158 (2) INFORMATION FOR SEQ ID NO:38:  
1159  
1160 (i) SEQUENCE CHARACTERISTICS:  
1161 (A) LENGTH: 20 amino acids  
1162 (B) TYPE: amino acid  
1163 (D) TOPOLOGY: linear  
1164  
1165 (ii) MOLECULE TYPE: peptide  
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1167 (v) FRAGMENT TYPE: internal  
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1189 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:  
1190  
1191 Leu Tyr Leu Tyr Gly Cys Ser Thr Ser Val Leu Gly Asn Val Leu Ile  
1192 1 5 10 15  
1193  
1194 Asn Glu Ser Phe  
1195 20  
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1197 (2) INFORMATION FOR SEQ ID NO:39:

1198

1199 (i) SEQUENCE CHARACTERISTICS:

1200 (A) LENGTH: 20 amino acids

1201 (B) TYPE: amino acid

1202 (D) TOPOLOGY: linear

1203

1204 (ii) MOLECULE TYPE: peptide

1205

1206 (v) FRAGMENT TYPE: internal

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1210 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

1211

1212 Leu Gly Asn Val Leu Ile Asn Glu Ser Phe Gly Val Glu Pro Val His

1213 1 5 10 15

1214

1215 Pro Gln Asp Gly

1216 20

1217

1218 (2) INFORMATION FOR SEQ ID NO:40:

1219

1220 (i) SEQUENCE CHARACTERISTICS:

1221 (A) LENGTH: 20 amino acids

1222 (B) TYPE: amino acid

1223 (D) TOPOLOGY: linear

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1225 (ii) MOLECULE TYPE: peptide

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1227 (v) FRAGMENT TYPE: internal

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1231 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

1232

1233 Gly Val Glu Pro Val His Pro Gln Asp Gly Asp Ala Leu Thr Leu Arg

1234 1 5 10 15

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1236 Thr Ala Thr Asn

1237 20

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1255 (2) INFORMATION FOR SEQ ID NO:41:

1256

1257 (i) SEQUENCE CHARACTERISTICS:

1258 (A) LENGTH: 20 amino acids

1259 (B) TYPE: amino acid

1260 (D) TOPOLOGY: linear

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1262 (ii) MOLECULE TYPE: peptide

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1264 (v) FRAGMENT TYPE: internal

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1268 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

1269

1270 Asp Ala Leu Thr Leu Arg Thr Ala Thr Asn Ile Trp Ile Asp His Asn

1271 1 5 10 15

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1273 Ser Phe Ser Asn

1274 20

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1276 (2) INFORMATION FOR SEQ ID NO:42:

1277

1278 (i) SEQUENCE CHARACTERISTICS:

1279 (A) LENGTH: 20 amino acids

1280 (B) TYPE: amino acid

1281 (D) TOPOLOGY: linear

1282

1283 (ii) MOLECULE TYPE: peptide

1284

1285 (v) FRAGMENT TYPE: internal

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1289 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

1290

1291 Ile Trp Ile Asp His Asn Ser Phe Ser Asn Ser Ser Asp Gly Leu Val

1292 1 5 10 15

1293

1294 Asp Val Thr Leu

1295 20

1296

1297 (2) INFORMATION FOR SEQ ID NO:43:

1298

1299 (i) SEQUENCE CHARACTERISTICS:

1300 (A) LENGTH: 20 amino acids

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1301 (B) TYPE: amino acid  
1302 (D) TOPOLOGY: linear  
1303  
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1321 (ii) MOLECULE TYPE: peptide  
1322  
1323 (v) FRAGMENT TYPE: internal  
1324  
1325  
1326  
1327 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:  
1328  
1329 Ser Ser Asp Gly Leu Val Asp Val Thr Leu Thr Ser Thr Gly Val Thr  
1330 1 5 10 15  
1331  
1332 Ile Ser Asn Asn  
1333 20  
1334  
1335 (2) INFORMATION FOR SEQ ID NO:44:  
1336  
1337 (i) SEQUENCE CHARACTERISTICS:  
1338 (A) LENGTH: 20 amino acids  
1339 (B) TYPE: amino acid  
1340 (D) TOPOLOGY: linear  
1341  
1342 (ii) MOLECULE TYPE: peptide  
1343  
1344 (v) FRAGMENT TYPE: internal  
1345  
1346  
1347  
1348 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:  
1349  
1350 Thr Ser Thr Gly Val Thr Ile Ser Asn Asn Leu Phe Phe Asn His His  
1351 1 5 10 15  
1352

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1353 Lys Val Met Leu  
1354 20  
1355

1356 (2) INFORMATION FOR SEQ ID NO:45:  
1357

1358 (i) SEQUENCE CHARACTERISTICS:  
1359 (A) LENGTH: 20 amino acids  
1360 (B) TYPE: amino acid  
1361 (D) TOPOLOGY: linear  
1362

1363 (ii) MOLECULE TYPE: peptide  
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1365 (v) FRAGMENT TYPE: internal  
1366  
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1387 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:  
1388

1389 Leu Phe Phe Asn His His Lys Val Met Leu Leu Gly His Asp Asp Ala  
1390 1 5 10 15  
1391

1392 Tyr Ser Asp Asp  
1393 20  
1394

1395 (2) INFORMATION FOR SEQ ID NO:46:  
1396

1397 (i) SEQUENCE CHARACTERISTICS:  
1398 (A) LENGTH: 20 amino acids  
1399 (B) TYPE: amino acid  
1400 (D) TOPOLOGY: linear  
1401

1402 (ii) MOLECULE TYPE: peptide  
1403

1404 (v) FRAGMENT TYPE: internal

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1408 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

1409

1410 Leu Gly His Asp Asp Ala Tyr Ser Asp Asp Lys Ser Met Lys Val Thr

1411 1 5 10 15

1412

1413 Val Ala Phe Asn

1414 20

1415

1416 (2) INFORMATION FOR SEQ ID NO:47:

1417

1418 (i) SEQUENCE CHARACTERISTICS:

1419 (A) LENGTH: 20 amino acids

1420 (B) TYPE: amino acid

1421 (D) TOPOLOGY: linear

1422

1423 (ii) MOLECULE TYPE: peptide

1424

1425 (v) FRAGMENT TYPE: internal

1426

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1429 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

1430

1431 Lys Ser Met Lys Val Thr Val Ala Phe Asn Gln Phe Gly Pro Asn Cys

1432 1 5 10 15

1433

1434 Gly Gln Arg Met

1435 20

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1453 (2) INFORMATION FOR SEQ ID NO:48:

1454

1455 (i) SEQUENCE CHARACTERISTICS:

1456 (A) LENGTH: 20 amino acids

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1457 (B) TYPE: amino acid  
1458 (D) TOPOLOGY: linear  
1459  
1460 (ii) MOLECULE TYPE: peptide  
1461  
1462 (v) FRAGMENT TYPE: internal  
1463  
1464  
1465  
1466 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:  
1467  
1468 Gln Phe Gly Pro Asn Cys Gly Gln Arg Met Pro Arg Ala Arg Tyr Gly  
1469 1 5 10 15  
1470  
1471 Leu Val His Val  
1472 20  
1473  
1474 (2) INFORMATION FOR SEQ ID NO:49:  
1475  
1476 (i) SEQUENCE CHARACTERISTICS:  
1477 (A) LENGTH: 20 amino acids  
1478 (B) TYPE: amino acid  
1479 (D) TOPOLOGY: linear  
1480  
1481 (ii) MOLECULE TYPE: peptide  
1482  
1483 (v) FRAGMENT TYPE: internal  
1484  
1485  
1486  
1487 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:  
1488  
1489 Pro Arg Ala Arg Tyr Gly Leu Val His Val Ala Asn Asn Asn Tyr Asp  
1490 1 5 10 15  
1491  
1492 Pro Trp Thr Ile  
1493 20  
1494  
1495 (2) INFORMATION FOR SEQ ID NO:50:  
1496  
1497 (i) SEQUENCE CHARACTERISTICS:  
1498 (A) LENGTH: 20 amino acids  
1499 (B) TYPE: amino acid  
1500 (D) TOPOLOGY: linear  
1501  
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(ii) MOLECULE TYPE: peptide

1520

(v) FRAGMENT TYPE: internal

1522

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

1526

1527 Ala Asn Asn Asn Tyr Asp Pro Trp Thr Ile Tyr Ala Ile Gly Gly Ser

1528 1 5 10 15

1529

1530 Ser Asn Pro Thr

1531 20

1532

(2) INFORMATION FOR SEQ ID NO:51:

1534

(i) SEQUENCE CHARACTERISTICS:

1536

(A) LENGTH: 20 amino acids

1537

(B) TYPE: amino acid

1538

(D) TOPOLOGY: linear

1539

(ii) MOLECULE TYPE: peptide

1541

(v) FRAGMENT TYPE: internal

1543

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

1547

1548 Tyr Ala Ile Gly Gly Ser Ser Asn Pro Thr Ile Leu Ser Glu Gly Asn

1549 1 5 10 15

1550

1551 Ser Phe Thr Ala

1552 20

1553

(2) INFORMATION FOR SEQ ID NO:52:

1555

(i) SEQUENCE CHARACTERISTICS:

1557

(A) LENGTH: 20 amino acids

1558

(B) TYPE: amino acid

1559

(D) TOPOLOGY: linear

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1561 (ii) MOLECULE TYPE: peptide  
1562  
1563 (v) FRAGMENT TYPE: internal  
1564  
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1585 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:  
1586  
1587 Ile Leu Ser Glu Gly Asn Ser Phe Thr Ala Pro Asn Glu Ser Tyr Lys  
1588 1 5 10 15  
1589  
1590 Lys Gln Val Thr  
1591 20  
1592  
1593 (2) INFORMATION FOR SEQ ID NO:53:  
1594  
1595 (i) SEQUENCE CHARACTERISTICS:  
1596 (A) LENGTH: 20 amino acids  
1597 (B) TYPE: amino acid  
1598 (D) TOPOLOGY: linear  
1599  
1600 (ii) MOLECULE TYPE: peptide  
1601  
1602 (v) FRAGMENT TYPE: internal  
1603  
1604  
1605 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:  
1606  
1607 Pro Asn Glu Ser Tyr Lys Lys Gln Val Thr Ile Arg Ile Gly Cys Lys  
1608 1 5 10 15  
1609  
1610 Thr Ser Ser Ser  
1611 20  
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1613 (2) INFORMATION FOR SEQ ID NO:54:

1614

1615 (i) SEQUENCE CHARACTERISTICS:

1616 (A) LENGTH: 20 amino acids

1617 (B) TYPE: amino acid

1618 (D) TOPOLOGY: linear

1619

1620 (ii) MOLECULE TYPE: peptide

1621

1622 (v) FRAGMENT TYPE: internal

1623

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1625

1626 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

1627

1628 Ile Arg Ile Gly Cys Lys Thr Ser Ser Ser Cys Ser Asn Trp Val Trp

1629 1 5 10 15

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1631 Gln Ser Thr Gln

1632 20

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1651 (2) INFORMATION FOR SEQ ID NO:55:

1652

1653 (i) SEQUENCE CHARACTERISTICS:

1654 (A) LENGTH: 20 amino acids

1655 (B) TYPE: amino acid

1656 (D) TOPOLOGY: linear

1657

1658 (ii) MOLECULE TYPE: peptide

1659

1660 (v) FRAGMENT TYPE: internal

1661

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1664 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:



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1665  
1666 Cys Ser Asn Trp Val Trp Gln Ser Thr Gln Asp Val Phe Tyr Asn Gly  
1667 1 5 10 15  
1668  
1669 Ala Tyr Phe Val  
1670 20  
1671  
1672 (2) INFORMATION FOR SEQ ID NO:56:  
1673  
1674 (i) SEQUENCE CHARACTERISTICS:  
1675 (A) LENGTH: 20 amino acids  
1676 (B) TYPE: amino acid  
1677 (D) TOPOLOGY: linear  
1678  
1679 (ii) MOLECULE TYPE: peptide  
1680  
1681 (v) FRAGMENT TYPE: internal  
1682  
1683  
1684  
1685 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:  
1686  
1687 Asp Val Phe Tyr Asn Gly Ala Tyr Phe Val Ser Ser Gly Lys Tyr Glu  
1688 1 5 10 15  
1689  
1690 Gly Gly Asn Ile  
1691 20  
1692  
1693 (2) INFORMATION FOR SEQ ID NO:57:  
1694  
1695 (i) SEQUENCE CHARACTERISTICS:  
1696 (A) LENGTH: 20 amino acids  
1697 (B) TYPE: amino acid  
1698 (D) TOPOLOGY: linear  
1699  
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1717 (ii) MOLECULE TYPE: peptide  
1718  
1719 (v) FRAGMENT TYPE: internal  
1720  
1721  
1722  
1723 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:  
1724  
1725 Ser Ser Gly Lys Tyr Glu Gly Gly Asn Ile Tyr Thr Lys Lys Glu Ala  
1726 1 5 10 15  
1727  
1728 Phe Asn Val Glu  
1729 20  
1730  
1731 (2) INFORMATION FOR SEQ ID NO:58:  
1732  
1733 (i) SEQUENCE CHARACTERISTICS:  
1734 (A) LENGTH: 20 amino acids  
1735 (B) TYPE: amino acid  
1736 (D) TOPOLOGY: linear  
1737  
1738 (ii) MOLECULE TYPE: peptide  
1739  
1740 (v) FRAGMENT TYPE: internal  
1741  
1742  
1743  
1744 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:  
1745  
1746 Tyr Thr Lys Lys Glu Ala Phe Asn Val Glu Asn Gly Asn Ala Thr Pro  
1747 1 5 10 15  
1748  
1749 Gln Leu Thr Lys  
1750 20  
1751  
1752 (2) INFORMATION FOR SEQ ID NO:59:  
1753  
1754 (i) SEQUENCE CHARACTERISTICS:  
1755 (A) LENGTH: 20 amino acids  
1756 (B) TYPE: amino acid  
1757 (D) TOPOLOGY: linear  
1758  
1759 (ii) MOLECULE TYPE: peptide  
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1761 (v) FRAGMENT TYPE: internal  
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1783 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:

1784

1785 Asn Gly Asn Ala Thr Pro Gln Leu Thr Lys Asn Ala Gly Val Leu Thr

1786 1 5 10 15

1787

1788 Cys Ser Leu Ser

1789 20

1790

1791 (2) INFORMATION FOR SEQ ID NO:60:

1792

1793 (i) SEQUENCE CHARACTERISTICS:

1794 (A) LENGTH: 13 amino acids

1795 (B) TYPE: amino acid

1796 (D) TOPOLOGY: linear

1797

1798 (ii) MOLECULE TYPE: peptide

1799

1800 (v) FRAGMENT TYPE: internal

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1804 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:

1805

1806 Asn Ala Gly Val Leu Thr Cys Ser Leu Ser Lys Arg Cys

1807 1 5 10

1808

1809 (2) INFORMATION FOR SEQ ID NO:61:

1810

1811 (i) SEQUENCE CHARACTERISTICS:

1812 (A) LENGTH: 60 amino acids

1813 (B) TYPE: amino acid

1814 (D) TOPOLOGY: linear

1815

1816 (ii) MOLECULE TYPE: peptide

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1818 (v) FRAGMENT TYPE: internal

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1822 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:

1823

1824 Asp Asn Pro Ile Asp Ser Cys Trp Arg Gly Asp Ser Asn Trp Ala Gln

1825 1 5 10 15

1826

1827 Asn Arg Met Lys Asp Ser Asn Trp Ala Gln Asn Arg Met Lys Leu Ala

1828 20 25 30

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1849 Asp Cys Ala Val Gly Phe Gly Ser Ser Thr Met Gly Gly Lys Gly Gly

1850 35 40 45

1851

1852 Asp Leu Tyr Thr Val Thr Asn Ser Asp Asp Asp Pro

1853 50 55 60

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1855 (2) INFORMATION FOR SEQ ID NO:62:

1856

1857 (i) SEQUENCE CHARACTERISTICS:

1858 (A) LENGTH: 60 amino acids

1859 (B) TYPE: amino acid

1860 (D) TOPOLOGY: linear

1861

1862 (ii) MOLECULE TYPE: peptide

1863

1864 (v) FRAGMENT TYPE: internal

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1868 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

1869

1870 Gly Ala Thr Arg Asp Arg Pro Leu Trp Ile Ile Phe Ser Gly Asn Met

1871 1 5 10 15

1872

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1873 Asn Ile Lys Leu Lys Met Pro Met Try Ile Ala Gly Tyr Lys Thr Phe  
1874 20 25 30  
1875  
1876 Asp Gly Arg Gly Ala Gln Val Tyr Ile Gly Asn Gly Gly Pro Cys Val  
1877 35 40 45  
1878  
1879 Phe Ile Lys Arg Val Ser Asn Val Ile Ile His Gly  
1880 50 55 60  
1881

## 1882 (2) INFORMATION FOR SEQ ID NO:63:

1883  
1884 (i) SEQUENCE CHARACTERISTICS:  
1885 (A) LENGTH: 50 amino acids  
1886 (B) TYPE: amino acid  
1887 (D) TOPOLOGY: linear  
1888

1889 (ii) MOLECULE TYPE: peptide  
1890

1891 (v) FRAGMENT TYPE: internal  
1892

## 1895 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:63:

1896  
1897 Leu Gly Asn Val Leu Ile Asn Glu Ser Phe Gly Val Glu Pro Val His  
1898 1 5 10 15  
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1915 Pro Gln Asp Gly Asp Ala Leu Thr Leu Arg Thr Ala Thr Asn Ile Trp  
1916 20 25 30  
1917

1918 Ile Asp His Asn Ser Phe Ser Asn Ser Ser Asp Gly Leu Val Asp Val  
1919 35 40 45  
1920

1921 Thr Leu

1922 50  
1923

## 1924 (2) INFORMATION FOR SEQ ID NO:64:

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1925  
1926 (i) SEQUENCE CHARACTERISTICS:  
1927 (A) LENGTH: 90 amino acids  
1928 (B) TYPE: amino acid  
1929 (D) TOPOLOGY: linear  
1930  
1931 (ii) MOLECULE TYPE: peptide  
1932  
1933 (v) FRAGMENT TYPE: internal  
1934  
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1936  
1937 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:64:  
1938  
1939 Leu Phe Phe Asn His His Lys Val Met Leu Leu Gly His Asp Asp Ala  
1940 1 5 10 15  
1941  
1942 Tyr Ser Asp Asp Lys Ser Met Lys Val Thr Val Ala Phe Asn Gln Phe  
1943 20 25 30  
1944  
1945 Gly Pro Asn Cys Gly Gln Arg Met Pro Arg Ala Arg Tyr Gly Leu Val  
1946 35 40 45  
1947  
1948 His Val Ala Asn Asn Asn Tyr Asp Pro Trp Thr Ile Tyr Ala Ile Gly  
1949 50 55 60  
1950  
1951 Gly Ser Ser Asn Pro Thr Ile Leu Ser Glu Gly Asn Ser Phe Thr Ala  
1952 65 70 75 80  
1953  
1954 Pro Asn Glu Ser Tyr Lys Lys Gln Val Thr  
1955 85 90  
1956  
1957 (2) INFORMATION FOR SEQ ID NO:65:  
1958  
1959 (i) SEQUENCE CHARACTERISTICS:  
1960 (A) LENGTH: 63 amino acids  
1961 (B) TYPE: amino acid  
1962 (D) TOPOLOGY: linear  
1963  
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1981 (ii) MOLECULE TYPE: peptide  
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1983 (v) FRAGMENT TYPE: internal  
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1987 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:65:  
1988  
1989 Cys Ser Asn Trp Val Trp Gln Ser Thr Gln Asp Val Phe Tyr Asn Gly  
1990 1 5 10 15  
1991  
1992 Ala Tyr Phe Val Ser Ser Gly Lys Tyr Glu Gly Gly Asn Ile Tyr Thr  
1993 20 25 30  
1994  
1995 Lys Lys Glu Ala Phe Asn Val Glu Asn Gly Asn Ala Thr Pro Gln Leu  
1996 35 40 45  
1997  
1998 Thr Lys Asn Ala Gly Val Leu Thr Cys Ser Leu Ser Lys Arg Cys  
1999 50 55 60  
2000  
2001 (2) INFORMATION FOR SEQ ID NO:66:  
2002  
2003 (i) SEQUENCE CHARACTERISTICS:  
2004 (A) LENGTH: 50 amino acids  
2005 (B) TYPE: amino acid  
2006 (D) TOPOLOGY: linear  
2007  
2008 (ii) MOLECULE TYPE: peptide  
2009  
2010 (v) FRAGMENT TYPE: internal  
2011  
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2013  
2014 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:66:  
2015  
2016 Asp Asn Pro Ile Asp Ser Cys Trp Arg Gly Asp Ser Asn Trp Ala Gln  
2017 1 5 10 15  
2018  
2019 Asn Arg Met Lys Asp Ser Asn Trp Ala Gln Asn Arg Met Lys Leu Ala  
2020 20 25 30  
2021  
2022 Asp Cys Ala Val Gly Phe Gly Ser Ser Thr Met Gly Gly Lys Gly Gly  
2023 35 40 45  
2024  
2025 Asp Leu  
2026 50  
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## (2) INFORMATION FOR SEQ ID NO:67:

2048  
2049 (i) SEQUENCE CHARACTERISTICS:  
2050 (A) LENGTH: 30 amino acids  
2051 (B) TYPE: amino acid  
2052 (D) TOPOLOGY: linear  
2053

2054 (ii) MOLECULE TYPE: peptide

2055  
2056 (v) FRAGMENT TYPE: internal  
20572058  
2059  
2060 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:67:  
20612062 Lys Met Pro Met Tyr Ile Ala Gly Tyr Lys Thr Phe Asp Gln Arg Gly  
2063 1 5 10 15  
2064  
2065 Ala Gln Val Tyr Ile Gly Asn Gly Gly Pro Cys Val Phe Ile  
2066 20 25 30  
2067

## (2) INFORMATION FOR SEQ ID NO:68:

2069  
2070 (i) SEQUENCE CHARACTERISTICS:  
2071 (A) LENGTH: 30 amino acids  
2072 (B) TYPE: amino acid  
2073 (D) TOPOLOGY: linear  
2074

2075 (ii) MOLECULE TYPE: peptide

2076  
2077 (v) FRAGMENT TYPE: internal  
20782079  
2080



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2081 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:68:  
2082  
2083 Asp Ala Leu Thr Leu Arg Thr Ala Thr Asn Ile Trp Ile Asp His Asn  
2084 1 5 10 15  
2085  
2086 Ser Phe Ser Asn Ser Ser Asp Gly Leu Val Asp Val Thr Leu  
2087 20 25 30  
2088  
2089 (2) INFORMATION FOR SEQ ID NO:69:  
2090  
2091 (i) SEQUENCE CHARACTERISTICS:  
2092 (A) LENGTH: 50 amino acids  
2093 (B) TYPE: amino acid  
2094 (D) TOPOLOGY: linear  
2095  
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2113 (ii) MOLECULE TYPE: peptide  
2114  
2115 (v) FRAGMENT TYPE: internal  
2116  
2117  
2118  
2119 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:69:  
2120  
2121 Leu Phe Phe Asn His His Lys Val Met Leu Leu Gly His Asp Asp Ala  
2122 1 5 10 15  
2123  
2124 Tyr Ser Asp Asp Lys Ser Met Lys Val Thr Val Ala Phe Asn Gln Phe  
2125 20 25 30  
2126  
2127 Gly Pro Asn Cys Gly Gln Arg Met Pro Arg Ala Arg Tyr Gly Leu Val  
2128 35 40 45  
2129  
2130 His Val  
2131 50  
2132

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2133 (2) INFORMATION FOR SEQ ID NO:70:

2134

2135 (i) SEQUENCE CHARACTERISTICS:

2136 (A) LENGTH: 40 amino acids

2137 (B) TYPE: amino acid

2138 (D) TOPOLOGY: linear

2139

2140 (ii) MOLECULE TYPE: peptide

2141

2142 (v) FRAGMENT TYPE: internal

2143

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2146 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:70

2147

2148

2149 Cys Ser Asn Trp Val Trp Gln Ser Thr Gln Asp Val Phe Tyr Asn Gly

2150 1 5 10 15

2151

2152 Ala Tyr Phe Val Ser Ser Gly Lys Tyr Glu Gly Gly Asn Ile Tyr Thr

2153 20 25 30

2154

2155 Lys Lys Glu Ala Phe Asn Val Glu

2156 35 40

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SEQUENCE VERIFICATION REPORT  
PATENT APPLICATION US/07/938,990

DATE: 02/11/93  
TIME: 11:03:35  
S4684

LINE ERROR

ORIGINAL TEXT

30 Wrong application Serial Number  
491 Wrong Sequence Number  
495 Sequence \* missing  
1873 Wrong Amino Acid Designator  
1868 Entered and Calc. Seq. Length differ  
13 Number of Sequences Doesn't Equal Actual

(A) APPLICATION NUMBER: 07/938,990  
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:  
(2) INFORMATION FOR SEQ ID NO:11:  
Asn Ile Lys Leu Lys Met Pro Met Trp Ile  
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:  
(iii) NUMBER OF SEQUENCES: 70

PAGE: 1

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PATENT APPLICATION US/07/938,990

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S4684

MANDATORY IDENTIFIER THAT WAS NOT FOUND

PAGE: 1

SEQUENCE CORRECTION REPORT  
PATENT APPLICATION US/07/938,990

DATE: 02/11/93  
TIME: 11:03:35  
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LINE ORIGINAL TEXT

CORRECTED TEXT

2146 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:70

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:70: